

Stieglbauer et al 2
Serial No. 10/523,957
Amendment to October 20, 2006 Office Action

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-12 (Canceled).

Claim 13 (Currently Amended): A method for monitoring the quality of spot welds, ~~particularly~~ for robotic applications comprising the following steps:

inserting a strip between at least two electrodes and metal sheets;

welding said metal sheets together via spot-welding tools by pressing said at least two electrodes opposite each other with said metal sheets being arranged therebetween to create a spot weld;

~~feeding said electrodes with power to create a welding spot,~~

~~inserting a strip between said electrodes and said metal~~

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~~sheets wherein conveying said strip is conveyed past said at least two electrodes and said metal sheets during after said step of welding metal sheets together, and wherein said strip is configured so that it forms an image representing the welding spot, spot weld;~~

~~wherein detecting and evaluating said image formed on said strip is detected and evaluated by an evaluation means;~~

~~assessing said welding spot weld on said metal sheets via said evaluation means via optical visualization of said image on said strip; and~~

~~determining the size, shape and position of the welding spot weld on said metal sheets from said image on said strip using said evaluation means.~~

Claim 14 (Currently Amended): The method as in claim 13, further comprising the step of tuning matching the material of the strip to the materials of the metal sheets to be welded so that the a temperature occurring during welding produces an image which is formed on account of a detectable change in a condition.

Claim 15 (Previously Presented): The method as in claim 13, wherein said step of welding said metal sheets comprises welding aluminum sheets using a strip having a tin coating.

Claim 16 (Previously Presented): The method as in claim 13, wherein said step of welding metal sheets comprises welding zinc coated sheets using a strip having a coating of copper.

Claim 17 (Currently Amended): The method as in claim 13, further comprising the step of applying a coat of ~~laquer~~ lacquer on the strip wherein said ~~laquer~~ lacquer evaporates at a temperature generated by a welding process forming a mirror inverted proportional image.

Claim 18 (Currently Amended): The method as in claim 13, wherein said step of evaluating said strip occurs at each ~~welding spot~~ weld.

Claim 19 (Currently Amended): The method as in claim 13, wherein said step of evaluating includes determining the size of the ~~welding~~ spot weld by taking an optical picture of said image

on said strip using a camera and then measuring said image on said strip taken by the camera.

Claim 20 (Currently Amended): The method as in claim 13, wherein said step of evaluation comprises determining a size, shape and position of a ~~welding~~ spot weld using a digital signal that is emitted by said evaluation means, wherein said digital signal is then evaluated to determine the size, shape and position of the welding spot.

Claim 21 (Currently Amended): The method as in claim 13, further comprising the step of multiplying the dimensions of said image by a factor of ~~the a~~ deposited weld to determine ~~the an~~ actual set of dimensions of the ~~welding~~ spot weld.

Claim 22 (Currently Amended): The method as in claim 13, further comprising the step of comparing said image on said strip with ~~the a~~ deposited reference weld to evaluate the welding point.

Claim 23 (Currently Amended): The method as in claim 13, further comprising the step of recording ~~the a~~ set of determined

dimensions of the welding spot weld in a database.

Claim 24 (Currently Amended): The method as in claim 13, further comprising the steps of removing the strip from said spot welding apparatus, and evaluating in a separate evaluation unit of said strip at an end of ~~the~~ a welding process.

Claim 25 (Currently Amended): The process as in claim 14, wherein said step of tuning matching the material of the strip includes tuning the material of the strip to create a detectable color change.

Claim 26 (Currently Amended): The process as in claim 14, wherein said step of tuning matching the material of the strip includes tuning the material of the strip to create a detectable change in a reaction of an aggregation state of a strip.

Claim 27 (Currently Amended): The process as in claim 14, wherein said step of tuning matching the material of the strip includes tuning the material of the strip to create a detectable change in the coating applied on the strip.

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Claim 28 (Currently Amended): The method as in claim 13, wherein said step of evaluating includes determining the shape of the ~~welding~~ spot weld by taking an optical picture of said image on said strip using a camera and then measuring said image on said strip taken by the camera.

Claim 29 (Currently Amended): The method as in claim 13, wherein said step of evaluating includes determining the position of the ~~welding~~ spot weld by taking an optical picture of said image on said strip using a camera and then measuring said image on said strip taken by the camera.

Claim 30 (Currently Amended): The method as in claim 13, wherein said step of evaluating includes determining the size, shape and position of the ~~welding~~ spot weld by taking an optical picture of said image on said strip using a camera and then measuring said image on said strip taken by the camera.

Claim 31 (New): The process as in claim 13, wherein said step of assessing said spot weld comprises assessing a mirror image of said spot weld formed on said strip.